

Geophysical Research Abstracts
Vol. 15, EGU2013-12564, 2013
EGU General Assembly 2013
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Monitoring of wetlands with SAR in permafrost regions

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Wetlands store large amounts of carbon, and depending on their status and type, they release specific amounts of methane gas to the atmosphere. For improved estimation of methane emissions, land surface models require information such as the wetland fraction and its dynamics over large areas. Existing datasets of wetland dynamics present the total amount of wetland (fraction) for each model grid cell, but do not discriminate the different wetland types like permanent lakes, periodically inundated areas or peatlands. Wetland types differently influence methane fluxes and thus their contribution to the total wetland fraction should be quantified. Especially wetlands of permafrost regions are expected to have a strong impact on future climate due to soil thawing.

A wetland dataset for Northern Eurasia based on ENVISAT ASAR Wide Swath data has been developed within the ESA STSE ALANIS-Methane project. A comprehensive cross-comparison to other wetland or wetland-related independent datasets is presented. The information sources cover a wide range of data types: Landsat based land cover maps, SAR derived land cover, coarse resolution wetland fraction, soil maps and the GeoWiki.